This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled).

2. (Previously Presented) A combustion control apparatus for an internal combustion engine, comprising:

an exhaust purifier in an exhaust passage of the internal combustion engine;

a combustion controlling actuator to cause main combustion, and to cause preliminary combustion prior to the main combustion; and

a controller to control fuel injection to produce the preliminary combustion, and to control fuel injection to start the main combustion after an end of the preliminary combustion;

wherein the combustion controlling actuator includes a fuel injector to inject fuel directly into a combustion chamber of the engine; and the controller is configured to perform a preliminary fuel injection to produce the preliminary combustion at or near top dead center, and to perform a main fuel injection to start the main combustion after the preliminary combustion is finished such that a premixed combustion process is predominant in the main combustion, the preliminary fuel injection being immediately prior to the main fuel injection, and

wherein the controller is configured to perform the preliminary fuel injection at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center.

3. (Original) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to control the combustion controlling actuator in a split combustion mode by controlling the fuel injection to produce the preliminary combustion at or near top dead center, and by controlling the fuel injection to start the main combustion after the end of the preliminary combustion when a split combustion request is produced to bring the exhaust purifier to an operative state.

4. (Original) The combustion control apparatus as claimed in Claim 3, wherein the controller is configured to control the combustion controlling actuator normally in a normal combustion mode, and to change over a combustion control mode from the normal combustion mode to the split combustion mode in response to the split combustion request produced in accordance with a condition of the exhaust purifier.

5. (Original) The combustion control apparatus as claimed in Claim 4, wherein the controller is configured to determine an estimated condition of the exhaust purifier and to produce the split combustion request in accordance with the estimated condition of the exhaust purifier, to request one of an increase in an exhaust gas temperature of the engine and a rich operation of the engine.

6. (Previously Presented) The combustion control apparatus as claimed in Claim 5, wherein the combustion control apparatus further comprises a condition sensor to collect information needed to determine the estimated condition of the exhaust purifying section.

7. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to delay the start of the main combustion with respect to the end of the preliminary combustion.

8. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to perform the main fuel injection for the main combustion at a timing to start the main combustion after an end of a heat releasing process of the preliminary combustion.

9. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to start the main fuel injection for the main combustion at a timing to inject fuel in a state in which flame subsides in the combustion chamber, to prevent diffusive combustion process in the main combustion.

10. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to control a preliminary fuel injection quantity

of the preliminary fuel injection to a smaller quantity required to increase an incylinder temperature in the combustion chamber, and to make a main fuel injection quantity of the main combustion greater than the preliminary fuel injection quantity, to produce engine torque with the main combustion.

11. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to control a preliminary fuel injection quantity for the preliminary fuel injection equal to a fuel quantity required to make an incylinder temperature in the combustion chamber at a fuel injection timing of the main combustion, higher than or equal to an auto ignition temperature enabling spontaneous ignition in the combustion chamber.

12. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein an amount of retard of a combustion start timing of the main combustion with respect to a combustion start timing of the preliminary combustion is equal to or greater than 20° in crank angle.

13. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein an amount of retard of a combustion end timing of the main combustion with respect to compression top dead center is equal to or greater than 50° in crank angle.

14. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to perform the preliminary fuel injection for the preliminary combustion during a compression stroke.

15. (Canceled).

16. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to vary at least one of a fuel injection quantity and a fuel injection timing of the preliminary fuel injection for the preliminary combustion in accordance with a compression end temperature which is a temperature in the combustion chamber at an end of a compression stroke.

17. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to control an exhaust gas temperature of the engine by varying the fuel injection timing of the main combustion.

18. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to control the main combustion so as to hold torque produced by the engine constant.

19. (Previously Presented) The combustion control apparatus as claimed in Claim 3, wherein the exhaust purifier includes a particulate filter to collect exhaust particulate matter, and the controller is configured to produce the split combustion request in accordance with an estimated particulate matter quantity of the particulate matter accumulated in the particulate filter, to increase an exhaust gas temperature for auto oxidation of the particulate matter in the particulate filter.

20. (Previously Presented) The combustion control apparatus as claimed in Claim 3, wherein the exhaust purifier includes an NOx trap catalyst device to trap NOx in a lean operation of the engine, and the controller (25) is configured to produce the split combustion request at a time to purify the NOx trapped in the NOx trap device.

21. (Original) The combustion control apparatus as claimed in Claim 20, wherein the controller is configured to produce the split combustion request (Fsp) in accordance with an estimated NOx quantity (Qnox) of the NOx trapped in the NOx trap device.

22. (Original) The combustion control apparatus as claimed in Claim 20, wherein the controller is configured to produce the split combustion request in accordance with a distance traveled by a vehicle powered by the internal combustion engine.

23. (Previously Presented) The combustion control apparatus as claimed in Claim 3, wherein the exhaust purifier includes an NOx trap device to trap NOx in a lean operation of the engine, and the controller is configured to produce the split combustion request at a time to purify sulfur content trapped in the NOx trap device.

24. (Original) The combustion control apparatus as claimed in Claim 23, wherein the controller is configured to produce the split combustion request in accordance with an estimated sulfur content quantity of the sulfur content trapped in the NOx trap device.

25. (Original) The combustion control apparatus as claimed in Claim 23, wherein the controller is configured to produce the split combustion request in accordance with a distance traveled by a vehicle powered by the internal combustion engine.

26. (Previously Presented) The combustion control apparatus as claimed in Claim 3, wherein the exhaust purifier includes an NOx trap catalyst device to trap NOx in a lean operation of the engine, and the controller is configured to produce the split combustion request at a time to warm up the NOx trap device.

27. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the controller is configured to perform a plurality of preliminary fuel injections to cause a plurality of heat releasing processes for the preliminary combustion prior to the main combustion so that at least one of the heat releasing processes of the preliminary combustion is produced at or near top dead center.

28. (Original) The combustion control apparatus as claimed in Claim 27, wherein the controller is configured to perform a plurality of preliminary fuel injections to cause a plurality of heat releasing processes for the preliminary combustion in a low engine load region.

29. (Previously Presented) The combustion control apparatus as claimed in Claim 2, wherein the combustion control apparatus further comprises the internal combustion engine which is a diesel engine.

30. (Previously Presented) A combustion control process for an internal combustion engine provided with an exhaust purifier in an exhaust passage of the internal combustion engine, the combustion control process comprising:

controlling fuel injection to produce preliminary combustion in an engine cycle by performing a preliminary fuel injection to produce the preliminary combustion at or near top dead center; and

controlling fuel injection to start main combustion after an end of the preliminary combustion in the engine cycle by performing a main fuel injection such that a premixed combustion process is predominant in the main combustion, the preliminary fuel injection being immediately prior to the main fuel injection,

the preliminary fuel injection being performed at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center.

31. (Previously Presented) The combustion control process as claimed in Claim 30;

determining an estimated condition of the exhaust purifier;

producing a split combustion request in accordance with the estimated condition of the exhaust purifier;

changeover a combustion control mode from a normal mode to a split combustion mode in response to the split combustion request; and

controlling the fuel injection to produce the preliminary combustion and the fuel injection to start the main combustion after the end of the preliminary combustion in the split combustion mode.

32. (Previously Presented) A combustion control apparatus for an internal combustion engine, comprising:

means for determining an estimated condition of an exhaust purifier in an exhaust passage of the internal combustion engine;

means for producing a split combustion request in accordance with the estimated condition of the exhaust purifier; and

means for controlling fuel injection to the engine in a split combustion mode in response to the split combustion request by controlling fuel injection to perform a preliminary fuel injection to produce preliminary combustion and controlling fuel injection to perform a main fuel injection to start main combustion after an end of the preliminary combustion such

that a premixed combustion process is predominant in the main combustion, the preliminary fuel injection being immediately prior to the main fuel injection,

the means for controlling the fuel injection including means for performing the preliminary fuel injection at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center,

the means for controlling the fuel injection including means for performing the preliminary fuel injection at such a timing as to cause a heat releasing process of the preliminary combustion to start before compression top dead center and to end after compression top dead center.

33. (Previously Presented) The combustion control process as claimed in Claim 30, wherein the preliminary fuel injection for the preliminary combustion is performed during a compression stroke.

34. (Previously Presented) The combustion control process as claimed in Claim 30, wherein the preliminary fuel injection is performed at such a timing as to cause a heat releasing process of the preliminary combustion to start before a compression top dead center and to end after the compression top dead center.

35. (Previously Presented) The combustion control process as claimed in Claim 30, wherein the start of the main combustion is delayed with respect to the preliminary combustion.

36. (Previously Presented) The combustion control apparatus as claimed in Claim 32, wherein the means for controlling the fuel injection to the engine in the split combustion mode includes means for decreasing a percentage of diffusive combustion in the main combustion and instead increasing a percentage of premixed combustion in the main combustion by delaying a start of the main combustion after the end of the preliminary combustion.